

PENDING CLAIMS

Claim 1: A device for ablating a tissue in an individual comprising:
an actuator having an inferior surface adapted to contact an abrasive material deliverable onto a tissue;
means for driving said actuator at a high frequency,
a container operably connected distally to the device having an opening therethrough adapted to deliver an abrasive material therein to the tissue or to collect ablated tissue or other biomolecule therein from an ablation site on the tissue;
a reservoir adapted to contain a pharmaceutical operably connected to said device;
and
a permeable membrane adapted to controllably release said pharmaceutical.

Claim 2: The device of claim 1, further comprising a housing means.

Claim 3 (canceled).

Claim 4: The device of claim 1, wherein said tissue is membranous or non-membranous.

Claim 5: The device of claim 4, wherein said membranous tissue is the stratum corneum.

Claim 6: The device of claim 5, wherein said non-membranous tissue is bone.

Claim 7 (canceled).

Claim 8: The device of claim 1, wherein said means for driving said actuator is a piezoelectric actuator, a solenoid, or a voice-coil.

Claims 9-13 (canceled).

Claim 14: The device of claim 1, wherein said abrasive material is biologically inert particles.

Claim 15: The device of claim 14, wherein said abrasive has a particle size of about 30 microns to about 120 microns.

Claim 16: The device of claim 15, wherein said abrasive has a particle size of about 50 microns to about 90 microns.

Claim 17: The device of claim 14, wherein said abrasive is diamond, aluminum oxide, carborundum, or ice.

Claim 18: The device of claim 1, wherein said abrasive further comprises a lubricant.

Claim 19: The device of claim 18, wherein said lubricant is water, a hydrogel, a lipid, aqueous carbohydrate, petrolatum, or glycerol or a combination thereof.

Claim 20 (canceled)

Claim 21: The device of claim 1, wherein said pharmaceutical is an anesthetic, nitroglycerin, an anti-nauseant, an antibiotic, a hormone, a steroidal antiinflammatory agent, a non-steroid antiinflammatory agent, a chemotherapeutic agent, an anti-cancer agent, an immunogen, an anti-viral agent or an anti-fungal agent, or a diagnostic material.

Claim 22: The device of claim 21, wherein said antibiotic is tetracycline, streptomycin, sulfa drugs, kanamycin, neomycin, penicillin, or chloramphenicol.

Claim 23: The device of claim 21, wherein said hormone is parathyroid hormone, growth hormone, gonadotropins, insulin, ACTH, somatostatin, prolactin, placental lactogen,

melanocyte stimulating hormone, thyrotropin, parathyroid hormone, calcitonin, enkephalin, or angiotensin.

Claim 24: The device of claim 21, wherein said anesthetic is lidocaine, bupivocaine, tetracaine, morphine, or fentanyl.

Claim 25: The device of claim 21, wherein said immunogen is a vaccine.

Claim 26: The device of claim 1, wherein said abrasive is a crystallized pharmaceutical or is a powdered pharmaceutical.

Claim 27 (canceled).

Claim 28: The device of claim 26, wherein said crystals are frozen.

Claim 29-33 (canceled).

Claim 34: The device of claim 1, further comprising:

a means for controlling feedback monitoring of a change in an electrical property of said tissue during ablation, said means for controlling including:

at least one first active electrode in electrical contact at a site of interest on said tissue;

a second return electrode in electrical contact distal to said first electrode at the site of interest;

an optional electrically conductive fluid interface between said first and second electrodes and the site of interest on said tissue; and

a controller to monitor an electrical current between said first electrode and said second electrode, said controller further comprising a microprocessor.

Claim 35: The device of claim 34, wherein said first electrode(s) and said second electrode and an electrolyte in body fluid in said tissue comprise a galvanic cell.

Claim 36: The device of claim 34, wherein said property is electrical impedance, electrical conductance, hydration, pH, or an endogenous electrical signal.

Claim 37: The device of claim 36, wherein said endogenous electrical signal is generated by a heartbeat or by brain activity of the individual.

Claims 38-42 (canceled).

Claim 43: The device of claim 1, further comprising:

a means for controlling feedback monitoring of a change in an optical property of said tissue during ablation, said means for controlling including:

at least one source of radiant energy directed at a site of interest on said tissue;

a light detector having optics with which to image said tissue thereon; and

a controller to monitor the radiant energy source and the light detector and to analyze data received from the light detector, said controller further comprising a microprocessor.

Claim 44: The device of claim 43, wherein said optical property is fluorescence or reflectance.

Claims 45-49 (canceled).

Claim 50: The device of claim 1, further comprising:

a means for controlling feedback monitoring of a change in a thermal property of said tissue during ablation, said means for controlling including::

at least one source of infrared energy directed at a site of interest on said tissue;

an infrared detector having optics with which to measure infrared emission from said tissue thereon; and

a controller to monitor the infrared energy source and the infrared detector and to analyze data received from the light detector, said controller further comprising a microprocessor.

Claim 51: The device of claim 50, wherein said thermal property is thermal diffusivity and thermal conductivity.

Claim 52-69 (canceled).